DOCUMENT MODIFICATION REQUEST (DMR)

PAGE 1 of 1

Refer to 1-A01-PPG-001 for Processing Instructions
***Print or Type** All Information (Except Signatures)*

1 Date	25
2/2/95	2-27-95 lmc DMR No. 95-DMR- 00035

2 Existing Document Number/Revision	3 New Document Number or Document Number if it is to be changed with this Revision
5-21000-OPS-GT 18/Rev 2	N/A
4 Originator's Name/Phone/Pager/Location	**5 Document Title**
N Elzinga/740-2740/WCFS Denver	Surface Geophysical Surveys

6 Document Type ☒ Procedure ☐ Other _____

7 Document Modification Type (Check only one)
☐ New ☐ Revision ☐ Intent Change ☒ Nonintent Change ☐ Editorial Correction ☐ Cancellation

8 Item	9 Page	10 Step	11 Proposed Modifications
1	6	5 1 1	In the last paragraph on this page, in the second line, add "EM-61" between EM-31 and EM-38
2	7	5 1 2 1	In the first bullet, add "EM-61" between EM-31 and EM-38
3	7	5 1 2 2	In the first bullet, second line, add "EM-61" between EM-31 and EM-38

12. Justification (Reason for Modification EJO # TP # etc.)

To further define some anomalous areas of the investigated trenches that appear to have metallic debris based on preliminary Geonics EM-31 results

OU 2 Temporary Limited Scope Expires July 31, 1995

If modification is for a new procedure or a revision list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15 If modification is for any type of change or a cancellation organizations are listed in Block 13 then Concurror prints and signs in Block 14, and dates in Block 15

13. Organization	14 Print, Sign (if applicable)	15 Date (if applicable)
SME	F. C. Grigsby F.C. Grigsby	2-27-95
Proj Mgr	P J Laurin	2-23-95
QA	R Stephen Luker	2.21.95

16. Originator's Supervisor (print/sign/date) Peter J Laurin — No Training Req

17 Assigned SME/Phone/Pager/Location	18. Cost Center	19 Charge Number	20. Requested Completion Date	21 Effective Date
Fred C Grigsby			3/1/95	02/28/95

22. Accelerated Review? Yes ☐ No ☒ — 23.ORC Review

24 Responsible Manager (print,sign date) Peter J Laurin

RF-47940 (5/93)

ADMIN RECORD

REVIEWED FOR CLASSIFICATION / UCNI
BY _____
DATE _____

LIST OF TABLES

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Change Number
6 & 7	02/28/95	95-DMR-000315

paleochannels, lateral, and in some instances, vertical extent of contaminants, and the presence of ferrous and nonferrous metals

The method involves the induction of electrical current into the subsurface A small alternating current passing through a transmitter coil produces a primary, time-varying magnetic field into the ground Through inductive coupling, the primary magnetic field produces small eddy currents in the subsurface which, in turn, create their own secondary magnetic field The receiver coil senses both the primary and secondary fields Changes in magnitude and phase of the individual currents are linearly related to the terrain conductivity These changes in the individual currents are converted to voltages and output as ground conductivity values, which can be recorded manually, by a strip recorder, or a digital logger Depth of investigation is related to the separation between the transmitter and receiver coils By using multiple coil spacings, several penetration depths can be achieved All conductivity values are subsequently plotted on a map so that their variation over the site can be analyzed

Terrain conductivity is a function of the soil or rock composition, the porosity and permeability of the subsurface units, and the conductivity of the fluids filling the pore spaces The possible sources of an EM anomaly must be kept in mind when collecting the data and during interpretation

95-AM2-000315

This SOP specifies procedures for EM surveys utilizing shallow penetration systems including the EM-31, EM-61, EM-38, and EM 34-3 These instruments can be utilized with two different coil orientations, the horizontal dipole mode (coils vertical coplanar) and the vertical dipole mode (coils horizontal coplanar) The two modes allow different penetration depths to be achieved

5 1.2 Survey Design

5 1 2 1 List of Necessary Equipment

95-AMR-000315

The following is a list of equipment that will be necessary to complete an EM survey

- Geonics EM-31, EM-61, EM-38, or EM 34-3 terrain conductivity system or equivalent (choice based on depth penetration required)
- Digital logger and/or analog strip recorder (when data collection is over large grid area)
- Wood stakes or lath
- Flagging
- Field notebook
- Black waterproof (permanent) pens

5 1 2 2 Field Procedures

A standard field procedure for conducting an EM survey is described below Prior to EM data collection, two preliminary procedures must be conducted These are

95-AMR-000315

- Design the appropriate field parameters given the purpose of the survey, (e g , depth of investigation, whether EM-31, EM-61, EM-38, or EM 34-3 is used, coil spacing, coil orientation, station spacing, etc)
- Survey the locations of line endpoints along each line and denote these locations in the field with lath or wood stakes Mark stations with coordinate designation based on the coordinate system used for the survey of the end points Transfer line and station locations to the appropriate base map